

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of)	
)	ET Docket 01-278
Review of Part 15 and Other Parts)	RM-9375
of the Commission's Rules)	RM-10051

REPLY COMMENTS OF CURRENT TECHNOLOGIES

March 12, 2002

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Pursuant to Section 1.415 of the Commission's Rules, Current Technologies, LLC, submits these Reply Comments in the above-captioned rulemaking.¹

A. Summary

Current Technologies has developed a practical, cost-effective way to deliver broadband digital signals to homes and businesses via electrical power lines. The technology is called Power Line Communications, or PLC, and involves overlaying equipment at certain points along the electric distribution network. The deployment of PLC technology represents the long-sought "third wire" to compete on commercially viable terms with telephone DSL and cable modem broadband delivery.

Implementing this technology may result in unintentional digital emissions from outdoor medium voltage power lines somewhat above Class B levels. But signals on 220/110 volt distribution and in-premises wiring will still meet Class B limits.

¹ *Review of Part 15 and other Part of the Commission's Rules*, ET Docket 01-278, Notice of Proposed Rulemaking and Order, FCC 01-290 (released Oct. 15, 2001) (Notice).

Current Technologies agrees with other parties requesting a review of the applicable limits.² We will file appropriate pleadings with specific recommendations or requests in the near future. In the meantime, we ask the Commission to encourage this new technology by refraining from action that would impede its eventual deployment.

B. About Current Technologies

Current Technologies was founded in July 2000 for the purposes of developing and implementing PLC technology.³ Power line networks and home power line wiring were not designed for carrying voice or data signals. Historically, the complex physical topology of home wiring, the physical properties of electrical cabling, the rapidly changing noise environment due to appliances connected to the wires, and the behavioral characteristics of the electric current itself precluded use of power lines as a communications medium. These barriers have now been breached. Current Technologies has developed, and is now demonstrating, its proprietary PLC technology with several different electric utilities in the United States, including the operation of its low voltage and medium voltage integrated system in suburban Maryland just outside Washington, D.C.

² Comments of the Power Line Communications Association at 13 (filed Feb. 12, 2002); Comments of the United Telecom Council at 3-4 (filed Feb. 12, 2002).

³ Current Technologies was founded by the Associated Group, LLC, which is the general partner of a private investment fund focusing on private equity investments in telecommunications, media, Internet and related technology and service companies. Associated was recently formed as a successor to, and by the managers of, The Associated Group, Inc. (AGI), which had been a multi-billion dollar publicly traded company. AGI specialized in investing in, advising, and operating emerging and established companies in numerous industries, including cable, competitive local telecommunications, cellular and PCS telephony, and broadcasting until it was sold in January 2000.

From a consumer standpoint, the Current Technologies power line solution is simple. The customer plugs a small, inexpensive modem into any wall outlet in the home or business. That modem device connects to a computer via a USB or Ethernet port for high speed Internet access. Except for installing a software application onto the computer, the customer need do nothing further.

C. Discussion

1. Broadband Via Power Lines

There are three distinct components relevant to communications over local power distribution lines. First, an electric utility brings power from a substation to a neighborhood along a "medium voltage" distribution line, typically at 1,000-40,000 volts. Second, a transformer on a pole or a street-side concrete pad near the destination steps down that voltage to the 220/110 volts needed for the house or office. Typically there is one such transformer for a small apartment building, small office building, or about 6-8 single-family residential units. Third, a set of wires from the transformer goes to the home or office building, to the fuse box or circuit breakers, and then to fixtures and outlets in every room.

Digital distribution *within* a home or office facility has been feasible for some time, using a specification such as HomePlug.⁴ And delivering signal to the vicinity of the home or office, over the medium voltage distribution lines, is conceptually straightforward. That step is comparable to digital distribution by DSL or cable, in that all three methods exploit otherwise unused spectrum capacity on the transmission medium to carry broadband data. The difficulty for power line distribution has always been at the local transformer, which is a very poor conduit

⁴ See www.homeplug.org

for high frequency digital signals. Some "transformer bypass" approaches in the past have failed to completely isolate the medium voltage distribution line from the premises wiring, and could not be used because of the risk they posed of electrical shock and fire to the customer premises (as well as utility equipment). Obviously any such risk is unacceptable. But Current Technologies has now developed a method of by-passing the step-down transformer without compromising safety.

2. *Competition for Broadband Delivery.*

Current Technologies' technical achievement makes possible the long-sought "third wire" (in addition to telephone and cable) for last-mile delivery of broadband communications services. This advance opens new channels for competition. As Chairman Powell noted last month, "Somebody is going to [figure out how to] use the electrical grid as a broadband platform. . . . Think about it. If every electrical plug becomes a broadband port, that would be huge."⁵ Earlier, speaking in support of multiple broadband platforms, Chairman Powell stated: "We should try to avoid the 'one-wire' problem that has precipitated heavy regulation and confounded competitive objectives in telephony. Broadband is a functionality, not a particular platform."⁶ Later in the same speech, he added,

Competition in the digital broadband world should come from many platforms. Competition will be both intra-modal and inter-modal. Competition will come from carriers providing choice through similar platforms and interconnection with incumbents. A great deal of

⁵ *The FCC's Powell on Broadband Rules*, BusinessWeek Online (Feb. 22, 2002). http://www.businessweek.com/bwdaily/dnflash/feb2002/nf20020222_3120.htm

⁶ *"Digital Broadband Migration" Part II*, Michael K. Powell, Chairman, FCC, press conference (Oct. 23, 2001). <http://www.fcc.gov/Speeches/Powell/2001/spmnp109.html>

competition, however, particularly for residential consumers, will come from other platforms⁷

PLC broadband delivery represents an "other platform." As such, it directly supports the Commission's recently reaffirmed policy of promoting competition among broadband platforms. In announcing a reexamination of broadband access over telephone lines -- companion to a parallel proceeding on cable access⁸ -- the Commission declared it will be guided by the following principles and policy goals:

1. "Encourage the ubiquitous availability of broadband access to the Internet to all Americans.
2. "Promote competition across different platforms for broadband services.
3. "Ensure that broadband services exist in a minimal regulatory environment that promotes investment and innovation.
4. "Develop an analytical framework that is consistent, to the extent possible, across multiple platforms."⁹

The availability of PLC broadband delivery can help further all of these goals, in part because the added competition reduces the need for direct regulation. And the Commission noted further that

⁷ *Id.*

⁸ *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 15 FCC Rcd 19287 (2000) (Notice of Inquiry).

⁹ *FCC Launches Proceeding to Promote Widespread Deployment of High-Speed Broadband Internet Access Services*, FCC News (released Feb. 14, 2002). *See also Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, Notice of Proposed Rulemaking, FCC 01-360 at para. 34 (released Dec. 20, 2001) (seeking comment on "the development of intermodal as well as intramodal competition in the provision of broadband services, and the existence of new technologies for the distribution of broadband services . . . that have the potential to further increase competition").

competition among multiple platforms serves congressional goals as well.¹⁰ Moreover, as the Power Line Communications Association noted in its comments, PLC technology will also enable electric utilities to begin offering a vast array of intelligent network services (which Current Technologies has already begun to demonstrate) without having to reconstruct their networks.¹¹

As Chairman Powell has also noted, implementing competition requires not only an appropriate regulatory environment, but capital as well. These are closely related, because the capital markets keep a close eye on evolving regulation. The Chairman referred to this link recently in the context of breaking news about Enron. "No one is immune from the kind of scrutiny that is taking place,' Mr. Powell said . . . 'What worries me most deeply' is that capital won't be available for investments that were risky before the Enron scandal broke and may appear even more risky now, he said. 'It's not just capital we need, *it's high-risk venture capital*.'"¹² This is precisely the position in which Current Technologies and other new technology developers in the communications space find themselves today.

¹⁰ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Dockets No. 02-33, 95-20, 98-10, Notice of Proposed Rulemaking, FCC 02-42 at page 4 note 8 (released Feb. 15, 2002), *citing* 47 U.S.C. Sec. 230(b)(3) (policy to "encourage the development of technologies which maximize user control over what information is received by individuals, families, and schools who use the Internet and other interactive computer services").

¹¹ Power Line Communications Association at 6-7.

¹² *Powell: 'Enronitis' May Be Industry's Biggest Woe*, TR Daily (Feb. 27, 2002) (emphasis added).

In short, the full commercial deployment of PLC broadband technology already being demonstrated by Current Technologies is directly responsive to Commission policy. It will require at most only a minor regulatory adjustment to go forward.

3. *Power-Line Broadband Delivery and Part 15*

Digital signaling along the low voltage distribution wiring and within the home or office building (*i.e.*, along the 220/110 volt interior wiring to individual outlets) can be carried out in full compliance with current Part 15 rules. But the carriage of data over medium voltage lines, from a central aggregation point to the respective transformers, is constrained by Part 15 emissions levels. Although Class B limits may permit a commercially viable range under certain circumstances, the data rate under those limited conditions often will be adequate to support only a small number of simultaneous end users. Moreover, given the multitude of network topologies on U.S. electric distribution networks -- with varying combinations of line taps, capacitors, multi-phase routes, and different forms of electric distribution line construction, just to name a few -- transmission distances and corresponding data rates over the medium voltage distribution lines in many circumstances will not be commercially viable under existing Part 15 limits. Accordingly, to achieve economic feasibility, the required signal strength in these circumstances will entail emissions somewhat over Class B levels on the medium voltage distribution lines.

Current Technologies plans soon to supplement these comments with appropriate documentation that requests relief from the Class B limits in specified frequency bands and under limited conditions, for the narrow purposes of delivering broadband content and narrowband enhanced utility network monitoring and control functions between aggregation points and the local transformers on medium voltage electric distribution lines. The request will explain how

the company's modulation methods make it possible to *exclude* certain sensitive bands, including radio astronomy, television reception, and amateur radio, so that emissions in those bands will not exceed Class B. The request will also explain how the typical geometry of medium voltage lines relative to homes and businesses adds further interference protection. Finally, Current Technologies will show that the requested relief does not result in interference to licensed users or otherwise undermine the purposes of the Part 15 rules.

In the meantime, Current Technologies asks the Commission to encourage the development of PLC technology and not to take action in the present proceeding that would impede its deployment.

CONCLUSION

Current Technologies will support Commission policy by offering "third wire" competitive broadband services via power lines. That will require a small and harmless adjustment to the Part 15 rules.

Respectfully submitted,

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SERVICE LIST

I certify that I have caused copies of the foregoing "Reply Comments of Current Technologies" to be transmitted by email and by hand delivery to the following persons:

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